# Trends in Terms of Trade of LDCs

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*The controversial Prebisch thesis in international economics of development asserts that (i) less-developed countries (LDCs) experience a long-run deterioration in their terms of trade with developed countries (DCs), and (ii) these experiences are the cause of the ever-widening gap in their* per capita *incomes with DCs. By surveying the controversy and discussing the connection between trends in terms of trade and international economic inequality, this paper attempts to disprove some widely held notions derived from misinterpretations and from broad generalisations with indirect inferences. We conclude that there is need for case studies, in order to evaluate and select appropriate policy options.*

**Introduction**

During the last three decades there has been an extended controversy over the alleged secular tendency of the net terms of trade to deteriorate for primary products and less-developed countries (LDCs) which, in the literature, is often referred to as the Prebisch thesis [1]. As pointed out by Arthur Smithies in1952, "one rarely hears an international economic discussion that does not involve the net terms of trade" [2].

In one very important respect the Prebisch thesis asserts that the past (and presumably future) experience of LDCs, long-run deterioration in their terms of trade with developed countries (DCs) has been (and will continue to be) the cause of the ever-widening gap in their *per capita* incomes. LDCs, thus, should counteract these adverse trends by forming regional economic groups with more widely protected markets, while claiming more international aid and assistance. Proponents of the theory that such a tendency exists also regard it as a criticism of neoclassical theories of international trade and, in recent North-South debates, of the existing rules of the international economic order [3]. Since the Prebisch thesis deals with important issues and still gives rise to numerous fallacies and myths, it is analytically worthwhile to explore and state afresh all the debates which its arguments have evoked.

The purpose of this paper is to survey and assess briefly the current state of the controversy over secular movements in the terms of trade between DCs and LDCs, and to discuss the connection between these movements and international economic

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inequality. We try to disprove some historical generalisations and some widely held notions, as well as policy recommendations, which have been derived from global analysis and/or misinterpretations. It is hoped that such a systematic stocktaking of existing facts and arguments may clear the subject and lead to further useful research and results. In the next section it is shown that trends in terms of trade can, in no way, be subjected to broad generalisations from indirect inferences. The third section discusses the connection in the Prebisch thesis between trends in terms of trade and international economic inequality, and shows that non-equalisation of factor rewards is sufficient while not necessary for persistent gap in incomes *per capita* between countries.

**Trends in Terms of Trade**

As a starting point, let us summarise the Prebisch thesis. Since there were no data showing any long-run worsening of the price position of primary producers themselves, Prebisch has used British data between 1876-1948 to develop his theory. These data show a secular improvement in the terms of trade of Great Britain. Prebisch then claims that one can use the inverse of the British experience to explain why a downward trend in terms of trade of primary products must take place. He thus generalises that the main reason for this secular deterioration is the alleged monopolistic structure of the markets of manufactures [4]. Pricing policies of employers, he says, and pressure from labour unions in manufacturing industries in DCs have forced prices upward, in the face of declining cost due to technological progress, whereas productivity gains in LDCs lead to lower export prices for primary products. Thus the advantages of technical progress are not passed on to the consumer in LDCs but are absorbed by rising wages and profits in DCs. Since most LDCs are essentially importers of manufactures and exporters of primary goods, their terms of trade also deteriorate. Prebisch then asserts that (i) specialisation according to neoclassical trade theory is disadvantageous for LDCs, and (ii) protection imposed by governments of LDCs is imperative to prevent further deterioration in their terms of trade and to ensure their comparative advantage in the longer run. A major implication of the Prebisch thesis is, moreover, that prospects are gloomy for *all* LDCs.

The Prebisch thesis, however, has not been accepted by most economists. Out of the 84 most important studies on the terms of trade of LDCs as listed in Table I, only 28 agree on the declining pattern of their secular trend; some 24 studies suggest on the contrary an increasing pattern, and the remaining 32 studies support no clear trend. The causes of changes in terms of trade are set out in Table II. For those who are sceptical about the declining trend as pointed out by the Prebisch thesis, the principal criticisms come down on the inappropriateness of the data [5]. For example, during the period under consideration, (i) quality improvements in manufactures are not adequately reflected, and (ii) transport costs are not considered because imports are measured c.i.f. whereas exports are measured f.o.b. Other factors that would have led to an upward bias in the terms of trade of Great Britain are in connection with statistical problems of choosing (i) an adequate concept of terms of trade (net, gross, income or factorial terms of trade, etc.), (ii) an appropriate index formula and method of weighting (Laspeyres, Paasche or Divisia, etc.) and (iii) an appropriate time period and reference base.

**Table I. Classification of Studies According to Different Theses on Secular Trends of Terms of Trade 1817-1980**

| Rising terms of trade of LDCs and/or primary products | Declining terms of trade of LDCs and/or primary products | Trends which are not empirically convincing or analytically justifiable |
|---|---|---|
| (1) D. Ricardo (1817) | (1) C. P. Kindleberger (1943; 1950; 1956[1]) | (1) W. Schlote (1938) |
| (2) T. R. Malthus (1820) | (2) K. Martin and F. G. Thackeray (1948) | (2) W. W. Rostow (1951) |
| (3) R. Torrens (1815; 1821) | (3) UN (1949; 1950) | (3) J. Young (1951) |
| (4) J. S Mill (1848) | (4) H. Singer (1950) | (4) J. Viner (1952) |
| (5) W. S. Jevons (1865) | (5) S. G. Triantis (1952) | (5) G. M. Meier (1952; 1968) |
| (6) A. Marshall (1903; 1926) | (6) H. Myint (1954-55) | (6) G. Haberler (1954; 1959; 1961a; 1961b; 1964) |
| (7) J. M. Keynes (1912) | (7) W. A. Lewis (1955) | (7) R. E. Baldwin (1955) |
| (8) D. H. Robertson (1915) | (8) G. Myrdal (1956a; 1956b; 1957a; 1957b) | (8) P. T. Ellsworth (1956) |
| (9) F. D. Graham (1932) | (9) M. K. Atallah (1958) | (9) C. P. Kindleberger (1964; 1968) |
| (10) C. Clark (1938; 1942) | (10) R. Prebisch (1959; 1964) | (10) T. Morgan (1959; 1963) |
| (11) A. E. Kahn (1946) | (11) E. Lerdau (1959; 1965) | (11) J. N. Bhagwati (1960) |
| (12) J. Viner (1946) | (12) R. Nurkse (1953; 1959) | (12) W. Baer (1962) |
| (13) G. Haberler (1947; 1958) | (13) E. M. Bernstein (1960) | (13) A. K. Cairncross (1962) |
| (14) W. A. Lewis (1949; 1952) | (14) T. W. Schultz (1961)[2] | (14) R. E. Lipsey (1963) |
| (15) A. Robinson (1954) | (15) R. Hall (1962) | (15) Bo Sodersten (1964) |
| (16) R. Mikesell (1954) | (16) A Emmanuel (1969) | (16) M. J. Flanders (1964) |
| (17) H. Aubrey (1955) | (17) T. Wilson *et al.* (1969) | (17) H. G. Johnson (1967) |
| (18) M. Moret (1957) | (18) R. A. Brecher (1974) | (18) M. C. Kemp (1968) |
| (19) P. Bairoch (1970) | *(19) J. Spraos (1980)* | (19) M. O. Clement *et al.* (1968) |
| | | (20) B. M. Bhatia (1969) |
| | | (21) U. N. (UNCTAD) (1975) |
| | | (22) H. d'Hérouville (1975) |
| | | (23) P. A. Yotopoulos and J. B. Nugent (1976) |
| | | (24) H. F. Henner (1976) |
| | | (25) H. H. Schloss (1977) |

**Notes:** (1) Deterioration for LDCs but not for primary products (pp. 239; 263-64).
(2) T. W. Schultz has found a rather stable evolution for the period 1904-50.

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There are, however, two other limitations on the qualitative validity of indirect inferences of secular movements of LDCs terms of trade which must be considered as the most severe. The first hangs heavily and specifically on the Prebisch thesis. Using the inverse of the British trend, Prebisch not only assumes that (i) the British experience with its terms of trade was shared by other DCs, but also that (ii) the price movements of primary goods are the same whether these are exported by DCs or LDCs, and (iii) the terms of trade between primary goods and manufactures are also the terms of trade between DCs and LDCs. Charles P. Kindleberger has concluded from his empirical study of eight industrial, European countries during the period 1870-1952 that "there is no long-run tendency for the terms of trade to move against primary products in favor of manufactures", because "no series is completely representative of the world terms of trade between primary products and manufactures" [6]. In the same direction, in another empirical study of these issues, Robert E. Lipsey concludes that, from his US data for 1879-1960, "among the three industrial areas compared, only one — the United Kingdom — showed evidence of substantial gains in its terms of trade, [so] the experience of the UK cannot be taken as typical of developed countries" [7]. Accordingly, any systematic discussion ought to consider the extreme heterogeneity both of primary producing countries and of the LDCs.

The other important bias and error which affects not only the Prebisch thesis, but also most of the studies participating in the debates on these issues, concerns the homogeneity of LDCs *through time*. Indeed, the distinction between DCs and LDCs is usually arbitrary in development studies. Results thus depend not only on where the line of division is placed between two global categories but also, and crucially, on changes in categories through time. For example, in *Patterns of Development, 1950-1970*, Hollis Chenery and Moises Syrquin have noted:

"In 1950, the beginning of the period considered here, there were only fourteen countries (United States, Canada, Switzerland, Sweden, Australia, United Kingdom, Denmark, Norway, Belgium, France, German Federal Republic, Finland, Netherlands, and Austria) that would be classified as "developed" in respect to all of the ten basic [development] processes. As Kutznets has shown, they constitute a quite homogeneous group in these and other respects. Nine additional countries (New Zealand, Japan, Israel, Puerto Rico, Italy, Czechoslovakia, German Democratic Republic, USSR and Ireland) have completed the transition in the past twenty years in that they now have structures similar to the first group in almost all of the ten dimensions." [8]

**Table II. Analysis of Changes in Terms of Trade between DCs and LDCs 1817-1980**

| Causes of changes | Selected studies |
|---|---|
| A. *Rising trends* | |
| (1) Diminishing returns in agriculture and extractive industries. | Ricardo, Malthus, Torrens, J. S. Mill, Jevons, Marshall, Keynes, A. Robinson, J. S. Mill, Graham. |
| (2) Size of countries: small countries are favoured because of relative strong demand by large countries. | |
| (3) Predictions based on econometric models: demand and supply conditions will turn against manufactures and DCs. | Lewis (1952), Aubrey. |
| B. *Declining trends* | |
| (a) Supply side: | |
| (1) Wage rises of unionised workers in DCs and monopoly pricing. | UN (UNCTAD), Prebisch, Singer, Myrdal, Emmanuel, |
| (2) Chronic surpluses of primary products due to secular fall in raw material content of industrial output. | Bernstein, Singer, |
| (3) Wages in LDC export sector fixed by peasant-earnings level because of unlimited supply of labour. | Lewis. |
| (4) Lack of flexibility in economic adjust- ments in LDCs and structural rigidity in primary production. | Kindleberger (1956), Myrdal. |
| (b) Demand Side: | |
| (1) Falling demand by DCs due to technological progress which reduces primary inputs in manufactured output and to synthetic substitutes. | UN (UNCTAD), Bernstein, Prebisch, Singer. |
| (2) Protectionism in DCs which reduces imports from LDCs. | UN (UNCTAD), Prebisch, |
| (3) Engel's law. | Kindleberger (1943; 1950), UN (UNCTAD), Prebisch, Schultz, Nurkse, |
| (4) Differences in cyclical movements of product prices: in prosperity, prices of primary products rise faster than those of manufactures, but this "gain" is more than compensated, in depression, by drastic falls in relative prices of primary products. | Prebisch, Triantis, Martin and Thackeray. Thackeray. |

Today some countries such as Greece, Portugal, Spain, Turkey, etc., are still classified by some authors (Pan A. Yotopoulos and Jeffrey B. Nugent) as LDCs and by others (UNCTAD) as DCs [9]. A similar problem emerges from the ten-year period analysis of world income and growth by Everett Hagen and Oli Hawrylyshyn [10]. Quite obviously the longer the period the less relevant are such worldwide aggregative studies. This is why, in most recent studies on development economics, countries are often classified in many subgroups instead of broader groups like DCs and LDCs [11]. Hans W. Singer, whose name is frequently associated with the Prebisch thesis, has lately pointed out that "development practitioners and politicians have now come fully around to appreciating that there is no single homogeneous "Third World" [and] thinkers like Hoselitz did not need OPEC to make this point" [12]. Thus the recent disaggregation of countries into OPEC, resources rich and resources poor countries, LDCs and least developed countries, and newly industrialising countries and fourth-world countries, etc., is nothing but case studies by specific countries and products.

Furthermore, as has already been noted, one major consequence of these allegations of declining trends in terms of trade of LDCs is a gloomy prospect for *all* LDCs. And, as a corollary of this situation, recommendations for the economic policy of many individual LDCs are based on the assumption that their terms of trade are deteriorating in the long run, which may be false as demonstrated by many case studies [13]. Therefore, it is not very prudent for a country to base any policy on the results of the Prebisch thesis just because it has put itself in the LDCs category. Due to all the important biases cited, and because of the importance of the debates on secular movements of terms of trade in discussions relative to economic development problems of LDCs, greater efforts must be devoted to *direct* measurements of trends in terms of trade of *individual* countries instead of debating broad generalisations derived from indirect inferences.

### Gap in Incomes *per capita*

In one other important respect, the Prebisch thesis stresses that the past (and probably future) experience of LDCs long-run deterioration in their terms of trade with DCs have been (and will probably continue to be) the cause of the observed fact of persistent differentials in income *per capita* between the "periphery" (in the Prebisch terminology) and the "centre" [14]. Indeed, according to Prebisch, since, "improvements in productivity tend to be fully reflected in the increment of the wage rate at the center, while at the periphery a part of the fruits of these improvements is transferred through the fall of export prices . . . the fall of wages in export activities [of LDCs], as a counterpart of the fall in prices, reflects the process of transfer of real income through the deterioration in the terms of trade" [15].

He also used a numerical example to show what the distribution of the benefits of technical progress *should* be [16]. In fact, in the 1950 version of his thesis, Prebisch assumed that (i) primary and industrial sectors contribute equally to finished products, (ii) productivity increases by 20 per cent in the former sector and by 60 per cent in the latter, while (iii) productivity in world output of finished products increases by 40 per cent (utilising (i) and (ii). Then, assuming further that all productivity changes are reflected in declining prices while nominal incomes remain constant in the periphery, Prebisch stated that the purchasing power of primary producers must increase by 16.7 per cent per unit of primary product. Since they are now producing 20 per cent more, their real income must rise by 40 per cent. In the centre, on the other hand, given that the purchasing power of a unit of industrial product has fallen by 12.5 per cent while workers are now producing 60 per cent more output, real income must also rise by 40 per cent. Thus, "the benefits of technical progress would have been distributed alike throughout the world, *in accordance with the implicit premise of the schema of the international division of labour*" [17].

As pointed out by June Flanders, this argument is nothing but a "fallacious and naive interpretation" of the equalisation of factor rewards theorem [18]. Firstly, by identifying wage with personal income, the Prebisch thesis assumes only one factor of production, namely labour. Secondly, it also assumes that there is complete specialisation in production in the centre and in the periphery. Unfortunately, these two assumptions are specifically considered by that theorem as obstacles to factor rewards equalisation [19]. It should also be noted that Prebisch was dealing with the *ideal* distribution of technical progress between DCs and LDCs. In spite of the misapplication of that theorem as pointed out by Flanders, it remains true nevertheless that factor rewards do not equalise in different regions of the world.

Perfect equalisation of factor rewards does *not* mean, however, that there will be no differences in incomes *per capita* among countries endowed with different amounts of capital *per capita* [20]. But non-equalisation of factor rewards certainly does. Equalisation of factor rewards is thus only a necessary, but not sufficient, condition for equalisation of incomes *per capita*. In this way, the theorem does not prove the irrelevance of international trade theory in the real world. Given the many obstacles present in the real world that prevent the achievement of the equality of factor rewards, and given the greatly varying endowment of capital *per capita* between LDCs and DCs, it would be expected that the gap in incomes *per capita* between these two groups of countries would be persistent [21].

## Concluding remarks

Where do we go from here? It seems obvious (to the present writer, at least) that much more detailed studies, on specific export products and the economic circumstances of individual LDCs, need to be done. These case studies are surely more useful to LDCs in terms of policy guidance than broad generalisations derived from indirect inferences on trends in terms of trade between primary products and manufactures. Without such works it is difficult to have much confidence in any policy options chosen by, or recommended to, LDCs.

But there is still more. Equally important is the need for better analysis in such important and difficult topics as international trade and development. Explicit models are needed to determine and explain many variables in optimising behaviour that still are treated like constants exogenously given in these fields of the neoclassical theory [22]. This very important aspect has been pointed out by Kenneth Arrow in his presidential address delivered to the American Economic Association in 1973, where he expressed his "discontents and expectations":

"Inequality in economic development among countries . . . provides a second, somewhat complicated difficulty for neoclassical theory. A purely neoclassical answer would explain differences in physical and human assets *per capita*. This of course raises the further question, how this came to be . . . but I think the more compelling problem is that the differences in income seem much too vast to be explained by factor differences." [23]

**References**

1. See Prebisch, R., *The Economic Development of Latin America and its Principal Problems*, New York, United Nations, April 1950; "Commercial Policy in the Underdeveloped Countries", *American Economic Review*, Vol. 49 No. 2, May 1959; "Development Problems of the Peripheral Countries and the Terms of Trade", in *Towards a Dynamic Development Policy for Latin America*, New York, United Nations, 1963; and *Towards a New Trade Policy for Development*. Other well known similar views are also put forward by Singer, H. W., "The Distribution of Gains Between Investing and Borrowing Countries", *American Economic Review*, Vol. 40 No. 2, May 1950; and Myrdal, G., "Toward a More Closely Integrated Free-World Economy", in *National Policy for Economic Welfare at Home and Abroad*, Lekachman, R., (ed.), Garden City, Doubleday, 1955.

   Recent discussions include Spraos, J., "The Statistical Debate on the Net Barter Terms of Trade Between Primary Commodities and Manufactures", *Economic Journal*, Vol. 90 No. 357, March 1980, pp. 107-28; Bell, R. T., "Theories of the Terms of Trade of Less Developed Countries: A Critical Survey", *Economia Internazionale*, Vol. XXXII No. 2-3, May-August 1979, pp. 200-17; Stein, L., Dependency Theories and Underdevelopment", *Journal of Economic Studies*, Vol. 6 No. 1, May 1979, pp. 64-85; and Schloss, H. H., "Declining Terms of Trade; Myth or Reality", *Economia Internazionale*, Vol. XXX No. 4, November 1977, pp. 466-69.

2. Smithies, A., "Modern International Trade Theory and International Policies", *American Economic Review*, Vol. 42 No. 2, May 1952, pp. 168-81.

3. Debates on gap, aid and new international economic order may be found in Bauer, P. T. and Yamey, B. S., "Against the New Economic Order", *Commentary*, April 1977; Stern, N. H., "Professor Bauer on Development", *Journal of Development Economics*, Vol 1 No, 4, December 1974, pp. 191-211, Bauer, P. T., "N. H. Stern on Substance and Method in Development Economics", *Journal of Development Economics*, Vol. 2 No. 4, December 1975, pp. 387-405; and Bhagwati, J. N., (ed.), *The New International Economic Order: The North-South Debate*, Cambridge, Mass., The MIT Press, 1977.

4. The other important reason is the operation of "Engel's Law" which states that the percentage of consumer income spent on food is a decreasing function of income.

5. A recent statistical article by J. Spraos has revived the statistical debate on the Prebisch thesis by demonstrating that a deteriorating trend is detectable in the data, but its magnitude is smaller than that suggested by the Prebisch thesis. See Spraos, J., "The Statistical Debate on the Net Barter Terms of Trade Between Primary Commodities and Manufactures", *Economic Journal*, Vol. 90 No. 357, March 1980, pp. 107-28.

6. Kindleberger, C. P., *The Terms of Trade: A European Case Study*, New York, Wiley 1956, p. 263.

7. Lipsey, R. E., *Price and Quantity Trends in the Foreign Trade of the United States*, Princeton University Press, 1963, p. 17.

8. Chenery, H., and Syrquin, M., *Patterns of Development, 1950-1970*, London, Oxford University Press, 1975, p. 10.

9. Yotopoulos, P. A. and Nugent, J. B., *Economics of Development, Empirical Investigations*, New York, Harper & Row, 1976; UNCTAD, *Handbook of International Trade and Development Statistics*, New York, 1972, 1976.

10. *Economic Development and Cultural Change*, Vol. 18, No. 1, Part II, October 1969: Hagen, E. E. and Hawrylyshyn, O., "Analysis of World Income and Growth, 1955-1965".

11. See for instance Ahluwalia, M. S., Carter, N. G. and Chenery, H. B., "Growth and Poverty in Developing Countries", *Journal of Development Economics*, Vol. 6 No. 3, September 1979, pp. 299-341; and Dadzie, K. K. S., "Economic Development", *Scientific American*, Vol. 243, No. 3, September 1980, pp. 58-65.
12. Singer, W., "Reflections of Sociological Aspects of Economic Growth Based on the Work of Bert Hoselitz", *Economic Development and Cultural Change*, Vol. 25, Supplement, 1977, p. 2.
13. See for instance case studies of India by Appleyard, D. R., "Terms of Trade and Economic Development, a Case Study of India", *American Economic Review*, Vol. LVIII, May 1968, pp. 188-99, and by Bhatia, B. M., "Terms of Trade and Economic Development: A Case Study of India, 1861-1939", *Indian Economic Journal*, Vol. 16 Nos 4-5, April-June 1969, pp. 414-33; case study of Indonesia by Rosendale, P., "The Indonesian Terms of Trade, 1950-73", *Bulletin of Indonesian Economic Studies*, Vol. 11 No. 3, November 1975, pp. 50-80; case study of Pakistan by Azfal, M., "Measuring the Gains from Trade: a Case Study of Pakistan's Trade with India", *Pakistan Development Review*, Vol. 13 No. 1, Spring 1974; and case study of Nigeria by Hawkins, E. K., "A Note on the Terms of Trade of Nigeria", *Review of Economic Studies*, Vol. 22 No. 1, 1954-55, pp. 47-56.
14. Persistent (and sometimes widening) differentials in income *per capita* between DCs and LDCs have been detected in or projected by most empirical studies. See, for instance, Bhagwati, J. N., *Economics and World Order, from the 1970s to the 1990s*, London, Macmillan, 1972; Ward, B., Runnalls, J. D., and d'Anjou, L., (eds.), *The Widening Gap, Development in the 1970s*, New York, Columbia University Press, 1971; and Leontief, W. W., *The Future of the World Economy*, New York, Oxford University Press, 1976. In order to discuss the connection between trends in terms of trade and persistent gap in *per capita* income, we will accept the division of the world into DCs and LDCs as a working hypothesis.
15. Prebisch, R., *op. cit.*, 1959, pp. 258, 262.
16. Prebisch, R., 1950, *op. cit.*, pp. 8-14.
17. Prebisch, R., *op. cit.*, 1950, p. 8. Italics added.
18. See Flanders, J., "Prebisch on Protectionism: an Evaluation", *Economic Journal*, Vol. 74 No. 294, June 1964, pp. 305-26.
19. See Samuelson, P., "International Factor Price Equalisation Once Again", *Economic Journal*, Vol. LIX, June 1949, pp. 193-7.
20. According to the Clark-Wicksteed neoclassical theorem of product exhaustion, we may write $y = w + r\frac{K}{L}$, where $y$, $w$, $r$, $K$ and $L$ are income *per capita*, wage rate, rental rate, capital and labour, respectively. It becomes clear that in case of perfect equalisation of wage and rental rates among countries, it is the endowment of capital *per capita* which determines the gap in incomes *per capita*.
21. Even in a dynamic world, it has been clearly demonstrated that in the long run, at least one country must specialise, due to supply reactions in the process of equalisation of factor rewards. So "trade means specialisation", as mentioned by Ohlin, and specialisation means non-equalisation of factor rewards. See Ohlin, B., *Interregional and International Trade*, Cambridge, Mass., Harvard University Press, 1933, and Stiglitz, J. E., "Factor Price Equalization in a Dynamic Economy", *Journal of Political Economy*, Vol. 78 No. 3, May-June 1970, pp. 456-88.
22. Some important variables to be explained are, for instance, the technological conditions within a country and the conditions of transmission of knowledge across national boundaries. See, Arrow, K. J., "Limited Knowledge and Economic Analysis", *American Economic Review*, Vol. LXIV, No. 1, March 1974, pp. 1-10.
23. Arrow, K. J., *op. cit.*, p. 2.